IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Benjamin Tjoa et al. Application No.: 10/789,807 Filed: February 27, 2004 For: GENERATION OF DENDRITIC CELLS FROM MONOCYTIC DENDRITIC PRECURSOR CELLS WITH GM-CSF IN THE ABSENCE OF ADDITIONAL CYTOKINES Customer No.: 20350	Confirmation No. 5631 Examiner: Juedes, Amy E. Technology Center/Art Unit: 1644 **DECLARATION OF MARNIX BOSCH UNDER 37 C.F.R. § 1.132**

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Marnix Bosch, declare and state as follows:

1. I am a co-inventor of the subject matter of U.S. Patent Application No. 10/789,807, entitled "Generation of Dendritic Cells from Monocytic Dendritic Precursor Cells with GM-CSF in the Absence of Additional Cytokines" (hereinafter "the '807 application" or "the application").

2. I currently hold the position of Vice President of Vaccine Research and Development at Northwest Biotherapeutics, the assignee of the '807 application. I have a Ph.D. in Medicine (Molecular Immunology) from the University of Leiden, the Netherlands. I have 18 years of post-graduate scientific and biomedical experience, including, for example, in the areas of Virology, Immunology, Transplantation, Dendritic Cell Therapy, and Cancer Therapeutics. A copy of my curriculum vitae is attached hereto as Exhibit 1.

3. As a co-inventor of the subject matter described in the '807 application, and as a researcher in the fields of Dendritic Cell Therapy, Immunology, and Cancer

Therapeutics (*see* ¶ 2), I am a person of skill in the art to which the invention as claimed in the application pertains.

4. I have read the Office Action dated August 23, 2006 ("Office Action"), issued by Examiner Juedes.

5. I understand from the Office Action that claims 1, 14, 17-19, and 23 stand rejected as allegedly anticipated by Sallusto and Lanzavecchia (*J. Exp. Med.* 179:1109-1118, 1994; hereinafter "Sallusto"). I also understand that claims 3, 8, and 9 stand rejected as allegedly obvious over Sallusto in view of Bernard *et al.* (*Hematol. Cell. Ther.* 40:17-26, 1998); that claims 13 and 20-22 stand rejected as allegedly obvious over Sallusto in view of Bosch *et al.* (Abstract C30, *J. Invest. Derm.*, 2001); and that claim 15 stands rejected as allegedly obvious over Sallusto in view of Lewalle *et al.* (*J. Immunol. Methods* 240:69-78, 2000).

6. I have read and understand the documents referenced in ¶ 5 above.

7. The statements set forth herein are offered to address the Examiner's remarks in the Office Action and to show that, as of the filing date of the '807 application, the references discussed in the Office Action do not disclose a method as presently claimed, and further that these references would not have led an artisan of ordinary skill to a method as presently claimed.

8. I understand that the Examiner cites to Table 1 of Sallusto as allegedly showing that Sallusto teaches "a method for generating dendritic cells from peripheral blood mononuclear cells (i.e., monocytic dendritic cell prescursors) by culturing [the cells] in GM-CSF in the absence of additional cytokines." (Office Action at p. 3.) I further understand that the Examiner, again citing Table 1 of Sallusto, asserts Sallusto's dendritic cells are "immature, as evidenced by their expression of CD11c and MHC, but lack of expression of B7." (*Id.*)

9. Contrary to the Examiner's remarks regarding Sallusto as summarized above, Sallusto does <u>not</u> disclose a method for generating dendritic cells from monocytic dendritic cell precursors by culturing the cells in GM-CSF in the absence of additional cytokines, for the reasons discussed further below.

10. As described in Sallusto, the identification of cells as dendritic cells ("DCs") "was based on three well-established and accepted criteria," including, *inter alia*, "their

surface phenotype, with high expression of CD1, MHC class I and class II, Ii, Fc?RII, B7, CD40, ICAM-1, LFA-3, and CD11c." (Sallusto at p. 1115, 1st col., 1st full paragraph.) Thus, per Sallusto, cells not exhibiting surface expression of one or more of these markers are not considered to be DCs.

11. Further, as Sallusto indicates, Sallusto's criteria for identification of DCs, including the criteria for surface marker expression, are criteria that have been well-established and accepted in the art. Thus, a person of ordinary skill in the art, reading Sallusto, would recognize that cells not meeting one or more of these criteria are not DCs.

12. An examination of the data from Table 1 of Sallusto clearly shows that cells cultured with GM-CSF, but in the absence of additional cytokines, were negative for CD1. Table 1 further shows that B7 expression was equivocal ("±"), and not positive ("+"), for cells cultured with GM-CSF without additional cytokines. (*See* Sallusto at p. 1112, Table 1, "GM-CSF" column.) This is in contrast to those cells cultured with GM-CSF and IL-4, which, in addition to expression of other DC phenotypic markers, exhibited both CD1 and B7 expression. (*Id.* at Table 1, "GM-CSF/IL-4" column.)

13. With regard to the Examiner's acknowledgment that Sallusto's GM-CSF-only cells "lack ... expression of B7," to the extent that the Examiner suggests that lack of B7 expression is a feature characteristic of immature dendritic cells, the Examiner has set forth an interpretation of Sallusto that is incorrect in view of the knowledge in the art. While B7 expression is upregulated in dendritic cells upon maturation, it was well-known as of the applications' filing date that dendritic cells also express B7 in their immature form. Indeed, this knowledge in the art is reflected in the Sallusto reference itself, as discussed above with respect to the DC surface phenotype.

14. Consistent with the knowledge in the art that immature dendritic cells express B7, the '807 application shows surface expression of B7 molecules (CD80 and CD86) on immature dendritic cells obtained by the methods of the present invention, as shown in, *e.g.*, Examples 3 and 6 and corresponding Figures 4 and 8, respectively.

15. Irrespective of B7 expression, because Sallusto's GM-CSF-only cells also clearly lack expression of the dendritic cell marker CD1, including CD1a (*see* Sallusto at Table 1), it is clear that these cells are not immature DCs. In this respect, and in contrast to Sallusto's

GM-CSF-only cells, the immature dendritic cells of the present application were shown to express CD1a in addition to B7. (*See* '807 application at, *e.g.*, Examples 1, 3, 5, and 6, and corresponding Figures 1, 4, 6A, and 8A, respectively.)

16. Thus, per Sallusto's own criteria as well as criteria well-established in the art for identification of DCs, Sallusto's "GM-CSF-only" cells are not dendritic cells, in contrast to those cells obtained by methods as disclosed and claimed in the present application.

17. Moreover, consistent with Sallusto's own criteria as well as criteria well-established for identification of DCs, Sallusto does ***not*** state that the GM-CSF-only cells are DCs. In contrast, Sallusto ***does explicitly*** state that GM-CSF/IL-4-expanded cells were identified as DCs. (*See* Sallusto at, *e.g.*, p. 1115, 1st col., 1st full para.) The notable lack in Sallusto of any explicit statement equating the GM-CSF-only cells with DCs would reasonably be viewed by the skilled artisan as Sallusto's own acknowledgement that the GM-CSF-only cells are not DCs.

18. Indeed, Sallusto states that "[o]ur DC lines were generated from adult peripheral blood and require IL-4 in addition to GM-CSF to maintain the immature, antigen presenting competent state." (Sallusto at p. 1114, 2nd col., last para., bridging to p. 1115, 1st col. (emphasis provided).) In this regard, I understand that the Examiner states that "the instant method is a method of differentiating immature dendritic cells, and not a method of maintaining immature dendritic cells." (Office Action at p. 3.) To the extent that the Examiner is suggesting, by this statement, that Sallusto's DCs were obtained without culture in IL-4, the Examiner's statement is inconsistent with any reasonable interpretation of Sallusto that would be reached by the skilled artisan reading this reference. Sallusto is concerned with the establishment of DC cell lines and clearly states that IL-4 was used in conjunction with GM-CSF to establish these cells lines. (*See* Sallusto at, *e.g.*, Abstract, 1st sentence.) Sallusto sets forth various culture conditions that were tested for differentiation and expansion of DCs. In describing conditions for the "generation" of DCs, Sallusto discloses that adherent or light density PBMC fractions were cultured with the various combinations of GM-CSF, IL-4, and TNF-a. (*See id.* at p. 1110, 2nd col., last para.) Sallusto further states that "a combination of GM-CSF and IL-4 provided the best conditions for the generation of cells with the characteristic phenotype and functional properties of DCs ...." (*Id.* (emphasis provided).) In view of this disclosure, the skilled artisan

would reasonably understand that Sallusto's method for obtaining and maintaining DCs required IL-4 throughout the entire culture period, including during differentiation from PBMCs.

19. I understand that the Examiner states that the instant claims "are not limited to an immature dendritic cell that expresses CD1a or B7." (Office Action at p. 3.) To the extent that the Examiner is suggesting that there is a class of immature dendritic cells that do not express CD1a or B7, such a suggestion is wholly inconsistent with any definition or characterization of immature dendritic cells accepted in the art as of the application's filing date. As discussed previously, according to Sallusto as well as the art-accepted criteria for identification of DCs, dendritic cells, by definition, express CD1a and B7, in addition to other characteristic surface markers. For this reason, a person of ordinary skill in the art, reading the instant '807 claims in light of the application, would reasonably understand that cells lacking CD1a and/or B7 expression, such as Sallusto's GM-CSF only cells, are not immature dendritic cells within the meaning of the instant claims.

20. With regard to the Examiner's statement that "Sallusto have performed the exact steps of the instantly claimed method and therefore must have inherently obtained an immature dendritic cell" (Office Action at p. 3), this statement is incorrect for at least two reasons. First, for the reasons already discussed above, Sallusto did not obtain immature dendritic cells using GM-CSF in the absence of additional cytokines. Second, Sallusto does not disclose the "exact" steps as presently claimed, for at least the reasons further discussed in ¶¶ 21-23, below.

21. Independent claim 1 specifies that the monocytic dendritic cell precursors be "non-activated." (*See* Claim 1). As taught by the '807 application, methods typically used to enrich cell populations for dendritic cell precursors can activate the precursor cells, initiating terminal differentiation of the cells into, for example, macrophage. (*See, e.g.*, '807 application at ¶ [0013].) Such activation-inducing methods included, for example, the adherence of cells to plastic. (*See, e.g., id.* at Example 7.)

22. The skilled artisan, reading Sallusto, would recognize that Sallusto's method includes cell adherence to plastic, and thus includes activation of dendritic cell precursors. In particular, Sallusto's cells were isolated either by adherence of PBMC's to plastic or by depletion of B and T lymphocytes from "light density fractions." (*See* Sallusto at, *e.g.*, p.

1110, 1st col., 3rd para.) With regard to the "light density fractions," the skilled artisan would readily understand that these cells are monocytes isolated by density gradient centrifugation and that, even if the cells are not further purified by adherence, they would adhere to the plastic substrate (*e.g.*, polystyrene flasks) used for subsequent tissue culture.

23. Further, the addition of other cytokines such as, *e.g.*, IL-4 or TNF-a, as used in previous methods, are believed to counter the effects of the isolation-associated activation of cells. (*See, e.g.*, '807 application at ¶ [0013].) By using non-activated precursors, as presently claimed, the need for additional cytokines is bypassed. (*See* '807 application at, *e.g.*, Example 3.) Sallusto's observations that IL-4 was required for generating dendritic cells from isolated precursors (as discussed above) are consistent with the specification's teachings that activated dendritic cell precursors require additional cytokines, while non-activated precursors do not.

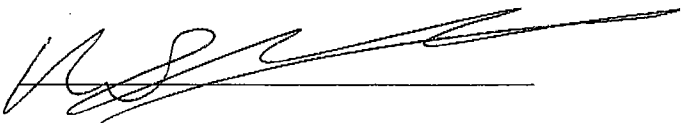
24. Accordingly, Sallusto does not disclose a method using "non-activated monocytic dendritic cell precursors," as presently claimed.

25. For at least the reasons above, a person of ordinary skill in the art would not reasonably interpret Sallusto as disclosing "a method for generating dendritic cells from non-activated monocytic dendritic cell prescursors by culturing GM-CSF in the absence of additional cytokines."

26. With regard to Bernard *et al.*, Bosch *et al.*, Lewalle *et al.*, none of these references disclose immature dendritic cells obtained by culturing non-activated dendritic cell precursors with GM-CSF in the absence of additional cytokines. The cells of both Bernard *et al.* and Lewalle *et al.* are cultured in GM-CSF in the presence of IL-4 (*see* Bernard *et al.* at, *e.g.*, p. 21, 2nd col.; Lewalle *et al.* at, *e.g.*, p. 70, 2nd col., ¶ 2.1.2; and Bosch *et al.* discuss conditions for obtaining mature dendritic cells (*see* Bosch *et al.*, Abstract). For at least these reasons, the skilled artisan, reading Sallusto in view of any one or more of these references would, would not have been led to the invention as presently claimed.

27. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that I make these statements with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

Code, and that such willful false statements may jeopardize validity of the application or any patent issuing therefrom.

Executed this 21 day of February, 2007 By: 

Name: Marnix Bosch

Title: VP Vaccine R&D

EXHIBIT 1

Curriculum Vitae

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BIOGRAPHICAL INFORMATION

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Other Biographical Information

Date of Birth	18 April 1959
Place of Birth	The Hague, the Netherlands
Marital status	Married, three children

PROFESSIONAL POSITIONS AND TRAINING

2001-Present	Vice President of Vaccine Research and Development Norhtwest Biotherapeutics
2000-2001	Director of Vaccine Research and Development Northwest Biotherapeutics
2000-Present	(Affiliate) Associate Professor, Department of Pathobiology, University of Washington, Seattle, WA
1994-2000	Assistant Professor, Department of Pathobiology, University of Washington, Seattle, WA
2000	Associate Professor, Department of Pathobiology, University of Washington, Seattle, WA
1994-2000	Core Staff Scientist, Washington Regional Primate Research Center, Seattle, WA
1991-1994	Department Head of Molecular Biology Laboratory of Immunobiology, RIVM, the Netherlands
1989-1994	Senior Scientist and Project Leader Laboratory of Immunobiology, National Institute of Public Health and Environmental Protection (RIVM), Bilthoven, the Netherlands. Lab Chief: Prof. Dr. A.D.M.E. Osterhaus
1987-1989	Postdoctoral Fellow at the Laboratory of Tumor Cell Biology, NCI, National Institute of Health, Bethesda, MD, USA Lab Chief: Dr. R.C. Gallo. Responsible Scientists: Dr. G. Franchini, Dr. F. Wong-Staal (section head)
1984-1987	Ph.D. Student in molecular immunogenetics, Lab. of Immunohaematology and Bloodbank, Academic Hospital, Leiden

thesis: "Molecular Analysis of a human immune response gene: "HLA-DRw6"

EDUCATIONAL BACKGROUND

1965	Montessorischool, Oegstgeest
1971	Elementary School: Nutsschool, Eindhoven
1977	High School: Gymnasium, Lorentz Lyceum, Eindhoven
1984	B.S. (cum laude) in Medical Biology, University of Utrecht, the Netherlands
1988	Ph.D. in Medicine (Molecular Immunology), University of Leiden, the Netherlands
2003	M.B.A. (with honors), Executive MBA program, University of Washington, Seattle

Undergraduate student in Medical Biology, University of Utrecht

Major: Clinical Immunology, Lab of Clinical Immunology,Academic Hospital Utrecht. Department Head: Professor R. Ballieux

Major: Molecular Immunogenetics, Lab of Immunohaematology and Bloodbank, Academic Hospital, Leiden. Department Head: Prof. Dr. J.J. Van Rood Graduated cum laude 1984

Additional Training

1991	Project Management
1991	Management Training
1992	Management and organization

SCHOLARSHIPS, FELLOWSHIPS, HONORS AND AWARDS

1987 – 1988	Fellowship from the Netherlands Organization for Pure Research

Main contributions and achievements:

Management

- Day to day management of Vaccine R&D division
- Maintainted relationships with manufacturing, regulatory, clinical, QA/QC
- Advised senior management
- Established and maintained relationships with clinical sites
- Established and maintained relationships with outside vendors
- Worked extensively with outside consultants.
- Key role in successful Northwest Biotherapeutics fundraising efforts.

Process Development

- Developed new automated purification process for monocytes
- Developed improved DC culturing methods
- Developed new clinical applications for DC immunotherapy

Preclinical

- Developed and guided preclinical work for cancer immunotherapy trials in lung cancer
- Developed and guided preclinical work for cancer immunotherapy trials in brain cancer.

Clinical

- Designed overall strategy for 2 pivotal clinical trials in oncology
- Designed and wrote Phase II clinical trial protocol for the application of dendritic cell immunotherapy to malignant brain cancer; trial cleared by the FDA May 2005.
- Developed the clinical protocol for a pivotal Phase III trial for the application of immunotherapy to hormone-refractory prostate cancer.
- Wrote Clinical Protocol and other essential sections of an IND for a Phase III pivotal trial IND in hormone-refractory prostate cancer; trial cleared by the FDA January 2005.
- Participated as lead discussant in direct discussions with the FDA that led to approval of 4 new INDs.
- Developed relationships with cancer centers, clinical sites and clinical investigators.

Inventions/patents/publications

- Inventor or co-inventor on several patent applications in the field of dendritic cell based vaccines for cancer.
- Coinventor on 2 patents on new geneproducts from human herpesvirus 8-related viruses.
- (Co-) author on >40 research publications.

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43. Whitby, D, Stossel, A, Gamache, C, Papin, J, **Bosch, ML**, Smith, A, Kedes, D, White, G, Kennedy, R, Dittmer, D. 2003. Discovery of a novel rhadinovirus (RV2 family) and evidence for a Kaposi's sarcoma-associated herpesvirus (KSHV/HHV8) RV1 homolog in baboons. *J Virol.* In press.

44. Shankar, G, Trimble, LA, **Bosch, ML**. 2003. Gamma Interferon added during Bacillus Calmette-Guerin (BCG)-induced dendritic cell maturation stimulates potent Th1 immune responses. *Journal of Translational Medicine.* 1:7.

45. Zhou, Z, Monahan, S, Turner, A, McEarchern, J, Pestano, G, Harris, PC, Bosch, ML. 2004. Large-Scale Purification of Monocytes for the Generation of Clinical Grade Dendritic Cells for Cancer Immunotherapy. *Biotechniques*. In press.

MANUSCRIPTS SUBMITTED

1. *Ambrose, Z, Thompson, JL, Beck, TW, Hu, S-L, **Bosch, ML**. 2001. Detection of mucosal and systemic antigen-specific intracellular cytokine responses in SHIV-infected and SHIV-immunized macaques. *Submitted.*

OTHER PUBLISHED SCHOLARLY PAPERS

1. **Bosch, ML**, Tilanus, MGJ and MJ Giphart. HLA-DRw6: a molecular approach. 1984.In: Histocompatibility Testing. Eds. Albert ED, Baur MP and WR Mayer.Springer Verlag Berlin, Heidelberg, p.576.

2. Tilanus, MGJ, **Bosch, ML**, Gerrets, R and MJ Giphart. 1984. Molecular analysis of HLA: haplotype-specific hybridization patterns using class II cDNA probes.In: Histocompatibility Testing. Eds. Albert ED, Baur MP and WR Mayer. Springer Verlag Berlin, Heidelberg, p.576.

3. **Bosch, ML**, Termijtelen, A, van Rood, JJ and MJ Giphart. 1988. Evidence of a hotspot for generalized gene conversion in the second exon of MHC genes. In: Immunobiology of HLA, Volume II: Immunogenetics and Histocompatibility. Ed. Dupont B. Springer Verlag New York, pp. 266-269.

4. **Bosch, ML**, Lagaay, EL, Termijtelen, A, van Rood, JJ and MJ Giphart. 1988. A DRw13-specific DR antigen implicated in poor kidney graft survival. In: Immunobiology of HLA, Volume II: Immunogenetics and Histocompatibility Ed. Dupont B. Springer Verlag New York, pp.521-523.

PUBLISHED ABSTRACTS

Many!

REVIEWS

Books

1. **Bosch, ML**, Siebelink, K and ADME Osterhaus. 1993. Genome organization and genetic variation of feline immunodeficiency virus. In: Basic AIDS Research, VolumeIII. Eds. Kennedy, RC, Koff, W and F. Wong-Staal. Marcel Dekker Inc. New York, pp. 21-39.

AUGMENTED CV

FUNDED RESEARCH

Funded Research:

1987-1988	Research Fellowship, Netherlands Organization for the Advancement of Pure Research, ZWO, the Netherlands
1989-1993	Research Grant: "Identification and Characterization of the Fusion Peptide of Primate immunodeficiency Viruses". PI: Council for Health Research (RGO), the Netherlands
1995-1997	Center for AIDS Research New Investigator Award. Evolution of HIV-1env V1, V2, V4 and V5 Regions. PI: Center for AIDS Research, Seattle;Total direct costs $50,000.
1995	Royalty Research Fund Grant. Protective Mucosal Immunity Against HIV-1.PI: Royalty Research Fund, University of Washington, Seattle;Total direct costs $26,624.
1995-1996	Supplement to Primate Center Core Grant. Project Leader. NIH Office for AIDS Research. Total direct costs $200,000.
1995	Award by the University of Washington Vice Provost for Research. co-PI.Total direct costs $21,000.
1995	Award by the University of Washington School of Public Health and Community Medicine. co-PI.Total direct costs $21,000.
1996	M.J. Murdock Charitable Trust: Exceptional Opportunity Grant. co-PI,. Total direct cost $ 50,000
1996-2000	Washington Regional Primate Center Core Grant NIH RR00166; project AIDS-BOSCH. Total direct cost $160,000/year
1997-2000	NIH R03 grant 1R03AI42505-01: Bacterial Toxins and anti-HIV-1 immunity. Total direct costs $ 50,000/year
1998-2003	NIH P01 grant 2P01AI26503-10: Combination immunization as an approach to AIDS Vaccines: Project 3: Mucosal Immunity and Protection. Total direct cost $ 170,000/year

TEACHING

Formal

Pathobiology 581, Journal Club, 1 credit, Winter 1996, 100% responsibility, 30 students.

Pathobiology 590a, Molecular Biology of AIDS, Spring 1996, 3 credits, graded, 100% responsibility,

Pathobiology 590a, Molecular Biology of AIDS, Spring 1997, 3 credits, graded, 100% responsibility,

Pathobiology 590a, Molecular Biology of AIDS, Spring 1998, 3 credits, graded, 100% responsibility,

Pathobiology 552, 4 credits, 50% responsibility

Informal

Advising - 2 Doctorate students. Served as Committee Chairman for 2 Ph.D. students and 2 M.S. students.

Completed Dissertations:
Arno Andeweg, Department of Immunobiology, National Institute for Public Health and Environmental Protection, Bilthoven, the Netherlands. Title: Envelope glycoproteins of HIV-1 induced membrane fusion. Ph.D., May 3, 1995.

Kees Siebelink, Department of Immunobiology, National Institute for Public Health and Environmental Protection, Bilthoven, the Netherlands. Ph.D., October 10, 1995.

Joko Pamungkas, Department of Pathobiology, University of Washington, Seattle. M.S., December 20, 1997

Louise Kimball, Department of Pathobiolgy, University of Washington, Seattle. M.S.., August 21, 1998

Zandrea Ambrose, Department of Pathobiology, University of Washington, Seattle.
Ph.D., February 2001.

Kurt Strand, Dept. of Pathobiology, University of Washington, Seattle. P.D., February 2002.

Thesis Committees:

Moffett Kable, Department of Pathobiology, University of Washington, Seattle.
Member, Thesis Committee, May 1995 - June 1998

Thomas Arroll, Department of Pathobiology, University of Washington, Seattle.
Member, Thesis Committee, May 1995 -December 1998.

Kurt Strand, Department of Pathobiology, University of Washington, Seattle.
Chair, Thesis Committee, Sept. 1994 – February 2002.

Louise Kimball, Department of Pathobiology, University of Washington, Seattle.
Chair, Thesis Committee, Sept. 1994 - August 1998.

Joko Pamungkas, Department of Pathobiology, University of Washington, Seattle.
Chair, Thesis Committee, Sept. 1994 - Dec. 1997.

Daniel Shriner, Department of Microbiology, University of Washington, Seattle.
Member, Thesis Committee, Sept. 1996 - Present.

Tige Rustad Department of Pathobiology, University of Washington, Seattle.
Member, Preliminary Research Committee. August 1999 - Present.

Cecilia Morgan, Department of Pathobiology, University of Washington, Seattle.
Member, Preliminary Research Committee. August 1999 - Present.

Claire Henkenson, Department of Microbiology, University of Washington, Seattle, Graduate School representative. Oktober 1999 – June 2001

INVITED PRESENTATIONS

1989	University of Vienna, Austria
1989	University of Amsterdam
1994	University of Rotterdam
1995	Amsterdam Free University
1996	First Annual conference on AIDS-related malignancies
1997	National Institute for Biological Standards and Controls, UK
1998	University of Massachusetts, Worcester, MA
2000	Frederick Cancer Research Facility, NCI, NIH
2001	C.E. Unterberg Towbin Health Sciences conference, New York
2003	Phacilitate conference on Vaccine Development, Boston

UNIVERSITY SERVICE

August 1994 - Jan 1996	Primate Center Advisory Committee, Washington Regional Primate Research Center, University of Washington, Seattle.
September 1994 - Present	Student Affairs Committee, Department of Pathobiology, University of Washington, Seattle.
January 1995 - Sept. 1998	Chair, Department of Pathobiology Admissions Committee, University of Washington, Seattle.
February 1995 – May 2000	Research Advisory Committee, Washington Regional Primate Research Center, University of Washington, Seattle.
March 1995 - Present	Indonesia Committee, Washington Regional Primate Research Center, University of Washington, Seattle.
April 1995 - Nov. 1995	Search Committee, Director Search, Washington Regional Primate Research Center, University of Washington, Seattle.
August 1995 - May 1996	Search Committee, Department Chair Search, Department of Pathobiology, University of Washington, Seattle.
Sept. 1995 - Sept. 1996	Rotations Coordinator, Dept. of Pathobiology, University of Washington, Seattle.
Sept. 1995 - Sept. 1998	Admissions Committee, Dept. of Pathobiology, University of Washington, Seattle (Sept. 1996 - Sept. 1998: chair).
Sept. 2000 – Sept. 2001	Faculty Council for Research, University of Washington, Seattle

COMMUNITY SERVICE

1999- 2001	Program Delivery Council, Medina Elementary School

OTHER INFORMATION

1982-1983	Member of the Board, the Utrecht Student Alpine Club (USAC)
1983	Member of the Board, Utrecht Student Rowing Society Triton
1984-1987	President of the Mountaineering Circle, the Hague

1992-1994 Referee Commissioner, Field Hockey and Cricket Club (SCHC)

Patents

1995 DNA polymerase of gamma herpes viruses associated with Kaposi's sarcoma and retroperitoneal fibromatosis. Inventor. U.S. Patent No. 5,925,733

1995 Glycoprotein B genes of gamma herpes viruses associated with Kaposi's sarcoma and retroperitoneal fibromatosis. Inventor. U.S. Patent No. 6,051,375

2001 Methods and Apparatus for enrichment and culture of monocytic dendritic cell precursors. Inventor. Filed July 25, 2001.

2001 Compositions and Methods for priming monocytic dendritic cells and T cells for Th-1 response. Inventor. Filed September 6, 2001.

2002 Devices and Methods for Leukocyte Enrichment. Inventor. Filed June 19, 2002.

2003 Administration of Dendritic Cells Partially Matured *in vitro* for the Treatment of Tumors. Inventor. Filed January 2003.

2003 Generation of Dendritic Cells from Monocytic Dendritic Precursor Cells with GM-CSF in the Absence of Additional Cytokines. Inventor. Filed February 2003.

Updated: 11/15/05